SNS COLLEGE OF TECHNOLOGY

An Autonomous Institution
Coimbatore – 35

Accredited by NBA – AICTE and Accredited by NACC – UGC with 'A+ Grade
Approved by AICTE , New Delhi and Affiliated to Anna University , Chennai.

DEPARTMENT OF AGRICULTURE ENGINEERING

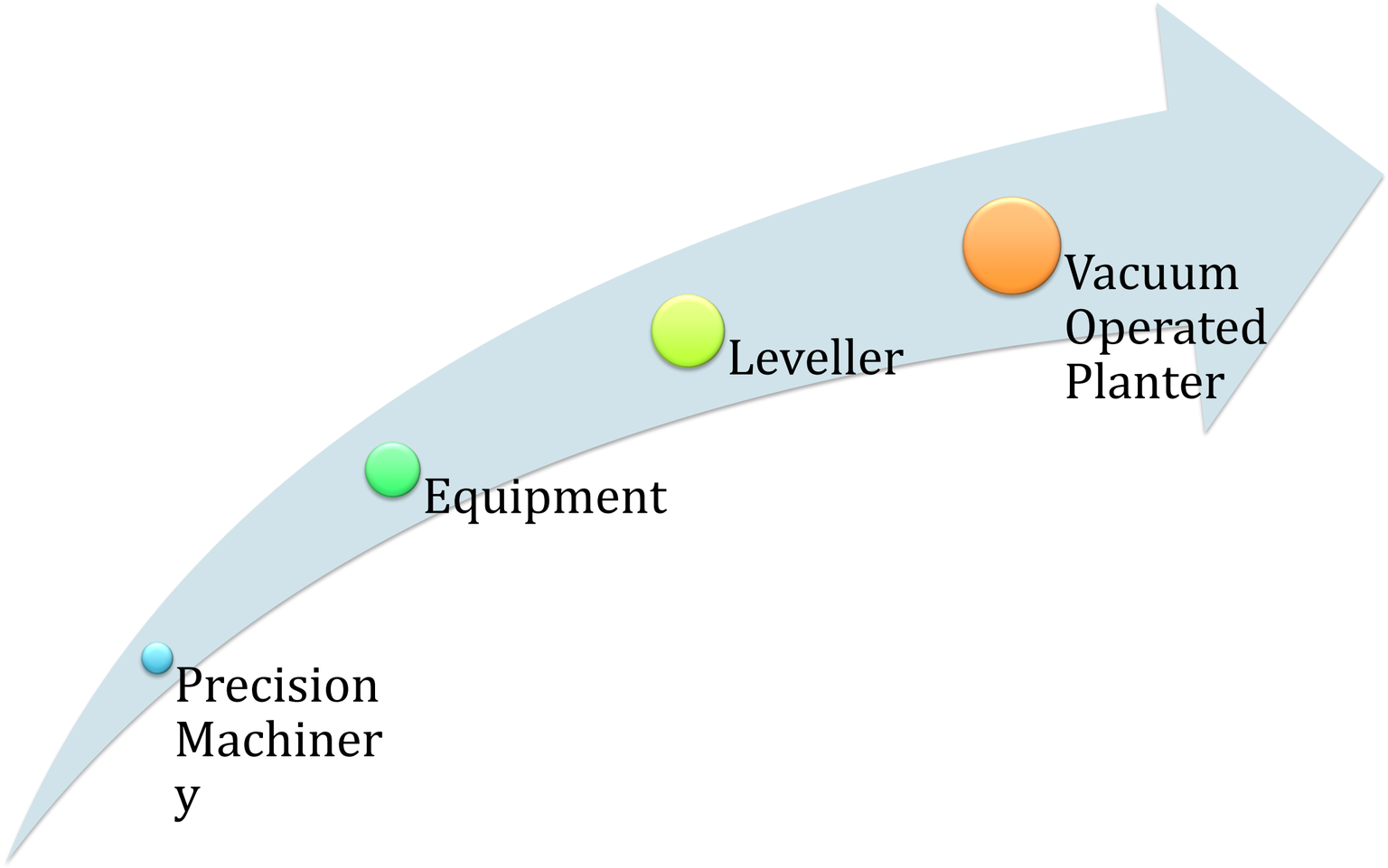
19AGT203 – AUTOMATION TECHNIQUES IN AGRICULTURE ENGINEERING

II – YEAR IV SEMESTER

UNIT 1 – ADVANCED MACHINERY/EQUIPMENT IN AGRICULTURAL ENGINEERING- I

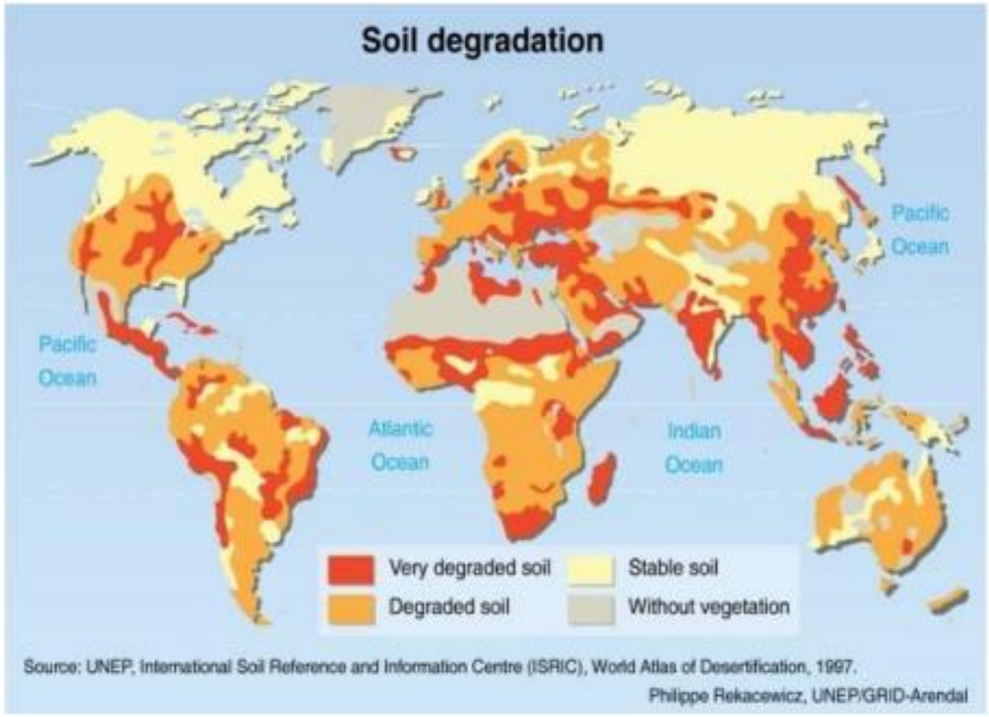
TOPIC 5 – INTRODUCTION TO SOIL AND WATER CONSERVATION AUTOMATION OF SURFACE AND PRESSURIZED IRRIGATION SYSTEM

Last Class Review



Why??

- Soil and water are two important natural resources and the basic needs for agricultural production. During the last century it has been observed that the pressure of increasing population has led to degradation of these natural resources



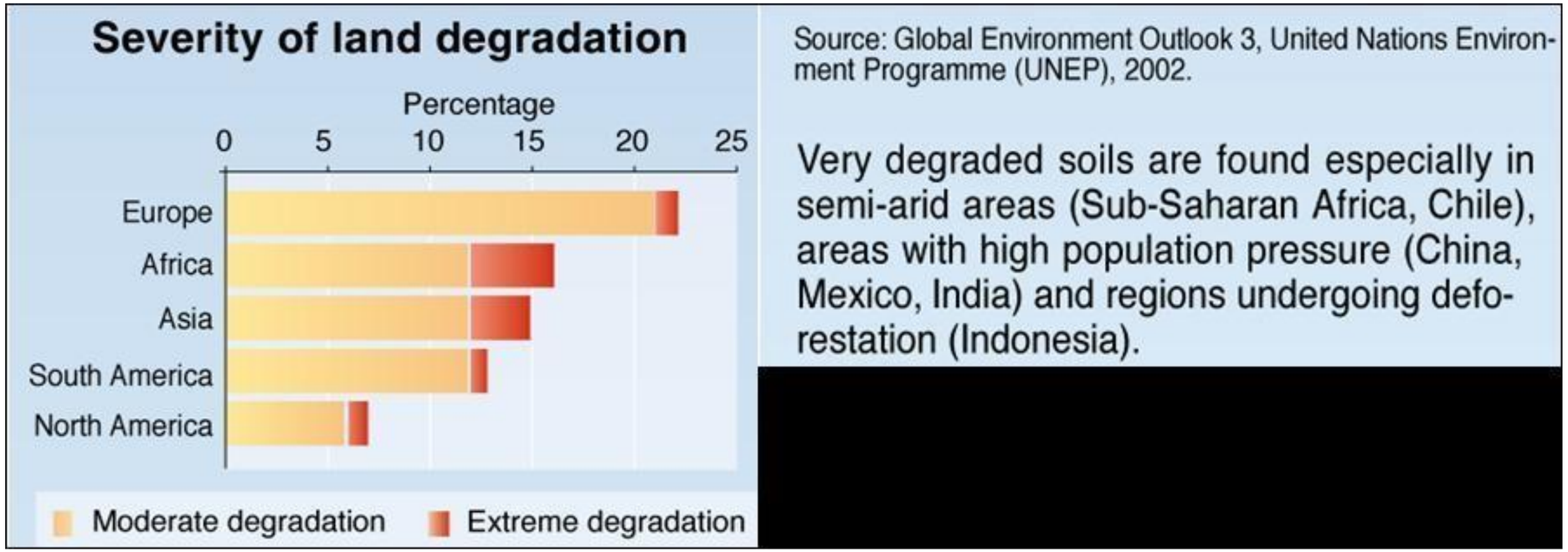
Soil Erosion

- The uppermost weathered and disintegrated layer of the earth's crust is referred to as soil.
- The soil layer is composed of mineral and organic matter and is capable of sustaining plant life.
- The soil depth is less in some places and more at other places and may vary from practically nil to several metres.
- The soil layer is continuously exposed to the actions of atmosphere.
- Wind and water in motion are two main agencies which act on the soil layer and dislodge the soil particles and transport them.
- The loosening of the soil from its place and its transportation from one place to another is known as soil erosion.

Erosion

Source: Peter H. Gleick, *Water in Crisis*, New York Oxford University Press, 1993.

Problems Arising due to Soil Erosion



Source: Global Environment Outlook 3, United Nations Environment Programme (UNEP), 2002.

Very degraded soils are found especially in semi-arid areas (Sub-Saharan Africa, Chile), areas with high population pressure (China, Mexico, India) and regions undergoing deforestation (Indonesia).

Automated Method

Surface irrigation. automation involves the use of wetting front advance sensors, flumes, and electronic timing. control gates to determine the irrigation cutoff time. Automation of surface irrigation systems increases irrigation efficiency and reduces the cost of labor and water

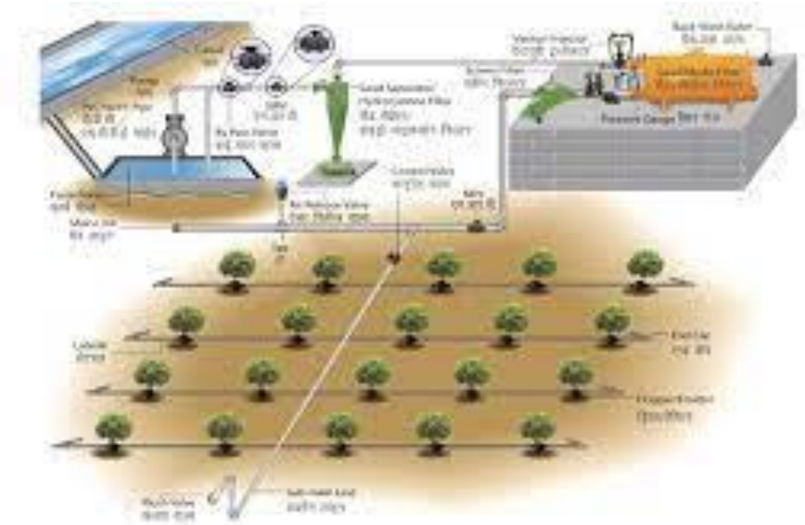


Fig.5.1 Typical layout of a micro irrigation system

How can Be Automated????

The logic of this system is very simple. In this system, the moisture sensor senses the moisture level of the soil and when the sensor senses a low moisture level it automatically switches the water pump with the help of a microcontroller and irrigates the plant.

Working Principle!!!!

Automated Irrigation Systems work by continuously monitoring the soil moisture content and wirelessly activating the pipeline valves to open when the moisture level drops below the minimum threshold for the cultivated crop, causing the land to be irrigated.

See You at Next Class!!!!